

Attorney Docket No.: KUZ-0018  
Inventors: Yasukochi et al.  
Serial No.: 10/502,412  
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**REMARKS**

Claims 5, 7, 10-12, 16-19, 21-23 and 27-29 are pending in this application. Claims 5, 7, 10-12, 16-19, 21-23 and 27-29 have been rejected. Claims 7, 16, 27, 28 and 29 have been amended and new claims 30-33 have been added. Support for these amendments is provided in the specification at page 7, lines 2-3 and lines 6-22. No new matter is added by these amendments. Reconsideration is respectfully requested in light of these amendments and the following remarks.

**Rejection of Claims 5, 7, 10-12, 16-19, 21-23 and 27-29  
under 35 U.S.C. § 103**

Claims 5, 7, 10-12, 16-19, 21-23 and 27-29 stand rejected under 35 U.S.C. § 103 as being unpatentable over Int'l Application Pub. No. WO 99/02141 to Kamiyama ("Kamiyama") in view of U.S. Patent 5,532,373 issued to Matsumoto et al. ("Matsumoto"). The Examiner acknowledges that a difference between the invention of claims 5, 7, 10-12, 16-19, 21-23 and 27-29 and Kamiyama is that Kamiyama employs peroxide as a curing agent, while the claimed invention involves the use of boric acid. However, the Examiner states that "Matsumoto et al. and Kamiyama are very similar, particularly relating to the use of adhesive film

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for release a substance." The Examiner therefore suggests that when Matsumoto disclose a shorter time required for drying when boric acid is used, it would have been obvious to one of ordinary skill in art to replace the peroxide curing system of Kamiyama with the boric acid curing system of Matsumoto to obtain the claimed invention.

Applicants respectfully traverse this rejection.

At the outset, it is respectfully pointed out that claims 27 and 28 have been amended to recite use of an acrylic copolymer or a methacrylic copolymer having one or more crosslinkable acrylic or methacrylic monomer units having at least one hydroxyl group and/or carboxyl group and one or more other monomer units containing at least 2-ethylhexyl acrylate and/or vinylpyrrolidone in the process. Support for this amendment is provided in the specification at page 7, lines 2-3 and lines 6-22. Monomer units such as 2-ethylhexyl acrylate and vinylpyrrolidone have low Tg and provide adhesive properties of the copolymer of the present invention.

In contrast, Matsumoto describe acrylic resins as the components of their image forming material (col. 35, lines 22-35), which have a high glass transition temperature (Tg) and which form a reaction product with a hardener such as boric acid which exhibits no adhesive property. Further,

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Matsumoto do not teach the copolymer comprising crosslinkable acrylic or methacrylic monomer units having at least one hydroxyl group and/or carboxyl group and monomer units of 2-ethylhexyl acrylate and/or vinylpyrrolidone. Nor do Matsumoto teach an adhesive as a product of the production process.

Accordingly, the production process and the product thereof of the instant claimed invention are clearly different from those described by Matsumoto.

Further, Applicants respectfully disagree with the Examiner's characterization of the teachings of Matsumoto. The Examiner states at page 5, page 6, page 7 and page 8 of the Office Action "when Matsumoto et al. (columns 40-43, examples 3-5) disclose a shorter time required for drying at about 100°C for 2 minutes and at about 50°C for 15 minutes when boric acid is use, motivated by the expectation of success of reducing the drying or curing time of Kamiyama, it would have been obvious to one of ordinary skill in the art to replace the peroxide curing system of Kamiyama with the boric acid curing system of Matsumoto et al." Nowhere, however, in columns 40-43, examples 3 through 5, do Matsumoto teach or suggest an embodiment using boric acid. Nor do Matsumoto teach or suggest reducing drying time by boric acid. Accordingly, the entire basis for this

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rejection repeated at pages 5, 6, 7 and 8 of the Office Action is flawed.

Instead, boric acid is disclosed in Matsumoto at col. 36, lines 4 and 9 as a hardener for use between layers of the recording material such as the photobleachable dye layer, intermediate layers and protective layers. See col. 35, lines 52-55. Such layers are not even included in either the present invention or Kamiyama.

Accordingly, one of ordinary skill in the art would not be motivated by Matsumoto to replace the peroxide curing system of Kamiyama with the boric acid hardener for layers of a recording material of Matsumoto.

Further, at pages 4-5 of the Office Action the Examiner describes Matsumoto as disclosing a "crosslinking agent such as boric acid (col. 36, line 4)." In contrast, Kamiyama describe peroxide as an initiator for polymerization (see page 8, line 26 through page 9, line 2 of Kamiyama), not as a crosslinking agent. Crosslinking agents are described by Kamiyama at page 8, lines 12-18 and include divinylbenzene, methylene bis-acrylamide, ethylene glycol di(meth)acrylate, ethylene glycol tetra(meth)acrylate, propylene glycol di(meth)acrylate, butylene glycol di(meth)acrylate or trimethylolpropane tri(meth)acrylate (see page 8, lines 12-18 of Kamiyama). Accordingly, were one of skill in the art

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to actually replace a crosslinking agent of Kamiyama with the boric acid disclosed by Matsumoto, this would not result in replacement of the peroxide initiator for polymerization as suggested by the Examiner nor the claimed invention.

Thus, the cited combination of references cannot render obvious the instant claimed invention. See MPEP 2143, and in particular Section G, which states that the rationale to support a conclusion that the claim would have been obvious is that "a person of ordinary skill in the art would have been motivated to combine the prior art to achieve **the claimed invention** (emphasis added) and that there would have been reasonable expectation of success".

The crosslinking agents actually taught by Kamiyama have from two to four carbon-carbon double bonds in their molecule and they react with the carbon radicals of the polymer to produce cross-links. Such cross-linking agents function quite differently from metal alcoholate, boric acid, borate and borate esters that react with polar groups such as hydroxyl or carboxyl groups. Such differences are clearly evidenced in the Handbook of Crosslinkers (edited by Shinzo Yamashita and Tosuke Kaneko, First Edition, Taiseisha Co., Ltd., October 20, 1981 (20.10.81), page 18 left column line 26 to page 19 right column line 6 and page 56 right

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column line 6 to 13, the English Translation and original copy in Japanese which are attached hereto). According to Kamiyama, hydroxyl groups should remain in the adhesive layer even after the cross-linking reaction for the solubility of the hydrophilic drug. Thus, what is obvious to those skilled in the art is that a cross-linker such as boric acid as described by Matsumoto, which is crosslinked by bonding to the hydroxyl groups, would **not** be used in the method taught by Kamiyama.

MPEP 2143.01, subsection VI, is clear; if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. Such different functions of the cross-linking agents of Kamiyama make replacement of one of these cross-linking agents with boric acid also unobvious.

Further, Kamiyama teaches that "a polar monomer is advantageously copolymerized with alkyl acrylate or alkyl methacrylate which it is desired to enhance the drug solubility of certain, especially hydrophilic, drugs. Suitable polar monomers which can be copolymerized with alkyl acrylates or alkyl methacrylates include hydroxyethyl

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acrylate, hydroxypropyl acrylate, vinyl pyrrolidone, acrylamide, dimethylacrylamide, acrylonitrile, diacetone acrylamide and vinyl acetate, although others will be apparent to those skilled in the art" (see page 6, lines 1-6 of Kamiyama). Thus, the block-copolymer of Kamiyama has the ability to enhance the drug solubility depending on the polar monomers such as hydroxyethyl acrylate or hydroxypropyl acrylate. For enhancing drug solubility in the invention of Kamiyama, polar hydroxyl or carboxyl groups must remain after crosslinking. However, cross-linking agents such as boric acid bond to the hydroxyl groups. Thus, there is clearly a disincentive to replace the cross-linking system in the method of Kamiyama with the boric acid system of Matsumoto.

The Examiner also suggests that Matsumoto disclose that the adhesive layer having a film backing is capable of releasing its content (a dye or drug) (page 4, lines 21-22) and that both Kamiyama and Matsumoto are drawn to substantially identical acrylic based adhesive, film backing and chemical release mechanism for releasing a chemical, drug, or a dye (page 5, lines 18-19). Applicants respectfully disagree with this interpretation. Contrary to the Examiner's suggestion, Matsumoto merely describe an element for causing coloring of and/or immobilizing the

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color image forming substance released from the light-sensitive microcapsules (col. 29, lines 25-27), and this substance, i.e. dye, is only released from the light sensitive microcapsules, not from the layer which rather holds the dye within the layer.

MPEP 2143.01, Section III and the case law are clear; the mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. KSR International Co. v. Teleflex Inc., 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1396 (2007). The above comments make clear that the resultant combination of teachings of Kamiyama and Masumoto fail to provide the required teaching or suggestion of the claim limitations and reasonable expectation of success with respect to the instant claimed invention to render the claimed invention obvious.

Withdrawal of this rejection under 35 U.S.C. 103(a) is respectfully requested.

### **Conclusion**

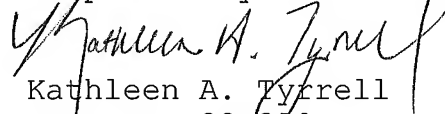
Applicants believe that the foregoing comprises a full and complete response to the Office Action of record.



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Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited.

Respectfully submitted,

  
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